

Clemson IMPACTS

Clemson University Public Service Activities

Fall 2005



Muscadine
vineyard offers
alternative
crop



Fiscal impact
analysis
changes
development
plans



New pest
control
regulations
begin in
January



Research
focuses on
genetics and
food



Technology
takes
bullying
into
cyberspace



Interest
grows in
Carolina
Gold rice



Letter from the Vice President

Almost everyone knows that Clemson researchers and Extension agents help farmers produce bigger and better crops. But did you know that they also work to ensure that farmers can afford to stay in business? As picturesque as farm life is, it must also be profitable or we will lose the main economic force in South Carolina's rural communities.

Speaking of rural communities, what would happen if a county government could not afford to pay its bills? Our community and economic development experts help local governments decide how to manage growth so expenses don't exceed revenues.

It is Clemson employees who regulate pesticide safety in South Carolina, including licensing pesticide applicators and educating rural families on how to protect well water from chemical contamination. And our researchers are studying the genetic mechanisms that allow food nutrients to protect the human body from hypertension, diabetes and other illnesses.

Finally, in addition to 4-H, our commitment to youth includes research to prevent bullying and training to improve teacher and student performance in public schools. You'll find more information on these and other services in this issue.

Sincerely,

John W. Kelly
Vice President for Public Service and Agriculture

Knowledge for living. Knowledge for life.

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PUBLIC SERVICE

Clemson Impacts, a quarterly publication of Clemson Public Service Activities, is available to South Carolina residents upon request. *Clemson Impacts* is also available on the web www.clemson.edu/public/

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Farmers find efficiency and profits at field day

By Tom Lollis

Farmers found ways to cut costs and improve efficiencies in beef, cotton, soybean, peanut and vegetable production at the Edisto Research and Education Center fall field day in Blackville.

Beef producers learned how to extend pasture grazing by 90 days by overseeding Bermuda pastures with annual rye blended with Arrowleaf clover. Forage specialist John Andrae also recommended planting small grains such as wheat, oats and rye plus ryegrass to establish winter grazing.

Peanut producers learned a variety of methods to reduce input costs from Jay Chapin, peanut specialist. He demonstrated test plots that received no calcium other than residual soil levels. Other plots received reduced levels of fungicides. Others were planted with less expensive runner seeds instead of the larger Virginia type varieties. Yields and economic results will be announced at a statewide meeting in Orangeburg in January.

Clemson weed scientist Chris Main advised peanut growers to control the two toughest weeds (pigweed and sicklepod) by putting out Valor and Dual behind the planter and using Cadre later for small pigweed and 2,4DB for sicklepod.



Peanuts are one of the state's recent success stories. Farmers have planted about 59,000 acres of peanuts this year, compared to around 11,000 acres four years ago. The field day also included demonstration plots for cotton, soybean, vegetables and melons, pest control strategies for transgenic cotton and a variable rate irrigation system.

For more information: www.clemson.edu/edisto/.

Natural herbicides prove effective against weeds

By Peter Kent

Farmers are facing a costly weed battle as they lose their primary chemical weapons. Methyl bromide, used to fumigate the soil and protect tomato and pepper crop yields, will be discontinued in 2007. Roundup®, the dominant herbicide for soybeans, cotton and other crops, is losing effectiveness.

Already Palmer amaranth and a handful of other weeds have become resistant, according to Clemson weed scientist Jason Norsworthy. If Roundup® resistance increases, farmers will need options to control weeds.

During four years of research, Norsworthy has discovered a natural herbicide that lowers costs and is environmentally friendly. He found that wild radish

and other members of the mustard family produce chemical compounds that control nutsedges, pitted morning glory and Palmer amaranth. These are three of the top 10 weeds that increase costs and lower production for farmers, especially tomato and pepper growers.

The option of using mustard family plants as cover



Prickly sida is one of the weeds controlled by an extract from wild radish.

crops to decrease weeds led 98 percent of the farmers surveyed to say they would try it. "In the future, natural herbicides may play an important role in keeping yield and quality up and prices down," Norsworthy said.

For more information: Jason Norsworthy, 864-656-3607 or jnorswo@clemson.edu.

Muscadine vineyard offers alternative crop

By Tom Lollis

The South Carolina Muscadine Vineyard Project has taken root at the Pee Dee Research and Education Center in Florence. The one-acre test plot contains 28 rows of 170 feet, each with three varieties of muscadine grapes – Carlos, Nobel and Doreen.

“We’re looking to develop value-added markets such as nutraceuticals,” said Jody Martin, Clemson Extension agent in Florence County. The nutraceutical, or dietary supplement, industry has annual sales in excess of \$80 billion nationally.

Martin called muscadines nature’s number one source of antioxidants. The primary antioxidant, resveratrol, helps protect the heart and nervous system and helps prevent cancer. It is contained in the skin and seeds, while the fiber can be used as filler for some meat products. He is working closely with Dermacon, Inc., a local nutraceutical company. The S.C. Tobacco Growers Association is also interested in the grapes as an alternative crop.

The vineyard demonstrates the basics of grape production, how to install trellises, plant the vines and use a trickle irrigation system. The vines are covered by growth tubes to protect them and allow them to get off to a faster start. Future work includes insect management and developing markets for the grapes, as fresh produce, wine, non-alcoholic juice, nutraceuticals or other products.

For more information: Jody Martin, 843-661-4800 ext. 115 or jamrtn@clemson.edu.



Soybean rust only a minor problem this year

By Tom Lollis

Asian soybean rust returned to South Carolina in 2005, but it did not produce the worst case scenario, according to John Mueller, soybean pathologist at the Edisto Research and Education Center. South Carolina has about 440,000 acres of soybeans, split between full season and double-cropped.

“Yield losses will be very minimal in our full season crop,” he said. Infected plants were discovered in mid-August in Hampton and Barnwell counties, and later in Calhoun County.

Mueller, Extension agents and Meg Williamson, diagnostician at the Plant Problem Clinic, have checked samples from more than 500 fields since May. He attributed low infection rates to two factors: hot, dry weather in late summer and growers who sprayed soybeans with protective fungicides.

Also, cool spring weather slowed the growth of disease hosts. More than 90 species of legumes, including kudzu, serve as hosts for the disease, according to Clemson Regulatory Services. The risk of the disease will return early in 2006.

For more information: John Mueller, 803-284-3343 ext. 223 or jmlr@clemson.edu.

Medicinal plants offer good profit potential

By Tom Lollis

It has taken six years, but the know-how for growing medicinal plants such as feverfew and Echinacea may now be ready for South Carolina farmers, said horticulturist Bob Dufault at the Coastal Research and Education Center in Charleston. Also known as nutraceuticals, medicinal plants have good profit potential for growers who contract with processors.

“An acre of feverfew has the potential to gross about \$7,000 and Echinacea, about \$5,000,” Dufault said. Feverfew is used as a remedy for migraine headaches and Echinacea is used as to aid the immune system.

A team of Clemson scientists have identified medicinal plant varieties that can tolerate South Carolina’s climate, determined the most effective cultural practices, and developed post-harvest handling methods that preserve potency.

“The biggest problem we’ve had is weeds,” Dufault said. A living mulch of Regal ladino clover shows promise. It chokes out tough weeds such as nutgrass and fixes nitrogen as a bonus. Solarization – using plastic sheeting to heat the soil before crops are planted – provides a non-chemical approach to kill nematodes, fungi and weed seeds.

For more information: Bob Dufault, 843-402-5389 or bdflt@clemson.edu.



Clemson teams prepare for disasters

By Tom Lollis

Whenever disaster hits South Carolina, Clemson University will be ready to help protect the state's farms and citizens. Three state Emergency Support Functions are part of Clemson's Public Service Activities. These groups are responsible for animal and other agricultural issues, food crops and rapid damage assessment for crops and farms.

Before a hurricane strikes, Extension personnel educate the public on how to prepare. When the S.C. Emergency Management Division activates the state emergency operations center, Clemson Livestock-Poultry Health personnel implement the animal emergency plan. This includes evacuating livestock and pets, and protecting people from animal-borne diseases.

Extension agents provide support during an emergency and help the S.C. Farm Services Agency assess farm damage and help farmers find the assistance they need after a hurricane. In addition, each county is organizing a County Agricultural Response Team (CART) to deal with agroterrorism and natural emergencies. These teams include health, law enforcement and other emergency management agencies. There are six regional teams with mobile equipment to confine loose livestock.

Clemson personnel are also prepared in case the disaster is man-made. In March, they organized one of the first Homeland Security training exercises in the nation to prepare state agencies for agroterrorism attacks. "We want to be prepared, but hope we never have to use it," said Howard van Dijk, Extension emergency preparedness coordinator.

For more information: Howard van Dijk, 803-773-5561 or hdijk@clemson.edu.



Fiscal impact analysis changes development plans

By Debbie Dalhouse

A Clemson economic development team is changing the way that Lancaster County looks at new residential development. The team reviewed costs and benefits associated with proposals for several new residential developments and discovered that the county would actually lose money on the projects.

Proposals to add 13,500 new homes would have cost the county more to build the infrastructure and provide additional services than it could collect in property taxes. The deficit would have exceeded \$5 million over a 10-year period.

"We didn't tell the Lancaster County Council not to add the new developments," said Bill Molnar, team leader. "We gave them some options to consider before they made a decision." Team members from Clemson's Institute for Economic and Community Development and the Strom Thurmond Institute conduct similar studies for cities and counties across the state.

As a result of the analysis, Lancaster County officials made significant policy changes for residential development. New fees and developer requirements will fund library, recreation, fire and EMS facilities. A new fee system will fund additional fire and EMS personnel. As a result, the county is no longer looking at a deficit when the new neighborhoods are developed.

"I can't thank Clemson enough," said Chap Hurst, Lancaster County administrator. "Rural counties are dealing with demands we've never faced before. This study is the first time we've been able to demonstrate the cost of new housing developments."

For more information: Bill Molnar, 803-788-5700 ext. 25 or wmolnar@clemson.edu.

New pest control regulations begin in January

By Tracy Outlaw

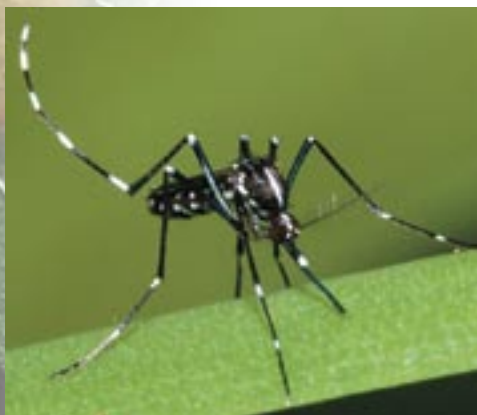
There will be significant changes in pesticide applicator regulations beginning January 1, 2006. Maintenance workers and other employees who previously may have applied pesticides as part of their normal duties without being licensed will have to either obtain a license or work under the direct supervision of someone who is licensed.

"Requests from the trade associations prompted this change," said Von McCaskill, head of Clemson's Department of Pesticide Regulation, the agency responsible for enforcing the S.C. Pesticide Control Act.

Licenses will be required for anyone working in aquatic pest control, turf and ornamental pest control, and in public health pest control. Aquatic pest control is the use of herbicides on lakes and ponds to control aquatic weeds and plants, including golf course ponds and water attractions. Turf and ornamental pest control refers to any type of pesticide application (herbicides, insecticides, or fungicides) to lawns or turf. Public health control refers primarily to mosquito control products, including residential mosquito control systems.

"Our primary goal is to educate the regulated community," said Cam Lay, assistant department head. "Mandatory licensing in these areas ensures that pesticide applicators understand the latest technology, application methods and safety issues."

For more information: Department of Pesticide Regulation, 864-646-2150 or <http://dpr.clemson.edu>.



Sudden oak death pathogen found

By Peter Kent

Clemson scientists have confirmed the first incidence in South Carolina of the pathogen that causes sudden oak death. Called *Phytophthora ramorum*, the fungus-like organism has killed thousands of oaks and associated plant species in the coastal forests of California and southwest Oregon. It also has attacked ornamental plants in nurseries and landscapes in the United States and Europe.

"One of the major concerns is that the climate here is similar to northern California," said Christel Harden, assistant department head for Plant Industry, a Clemson regulatory agency that oversees agriculture activities in the state. "If the pathogen takes hold, it could cause significant damage to the forest and nursery industries."

In South Carolina, forestry is an \$835-million industry. Hardwoods cover more than half the state's 12 million acres of forests. The "green" industry – turf and ornamental crops – is the state's No. 2 agricultural commodity, valued at \$290 million. The disease easily spreads by moving nursery plants that are hosts, including camellias, rhododendrons, azaleas and mountain laurels. Symptoms look like many common plant diseases: leaf spot, tip burn, dieback, leaf lesions and bleeding cankers.

"Don't dig up any plants or destroy them until they can be tested," said Steve Jeffers, Clemson plant pathologist and leader of the monitoring effort. "Report any sick shrubs to the Clemson Department of Plant Industry at 864-646-2139 as soon as possible."

For more information: Christel Harden, 864-646-2139 or charden@clemson.edu.



Regulatory agency ensures safe drinking water

By Tracy Outlaw

The majority of South Carolina's rural population relies on well water as their primary source of drinking water. To be sure their water is safe Clemson's Department of Pesticide Regulation began a groundwater-sampling program in the fall of 1991.

Wells on private and public land have been sampled for 22 commonly used pesticides and nitrate, a component of fertilizer, to determine whether chemicals used in farming, landscape management, and home gardening are compromising groundwater resources.

The regulatory agency found that 99% of the state's domestic wells met federal standards for safe drinking water. Only 3% of wells had any measurable trace of pesticide. If the pesticide concentration is above safe levels, the well owner is advised not to drink or use the contaminated water for cooking. Agency personnel follow up with education for the well owner on how to protect groundwater from contamination.

"If you use pesticides, it is crucial that you follow the label direction thoroughly to protect yourself and your property's water from pesticide contamination," said Jerry Moore, hydrogeologist for Pesticide Regulation.

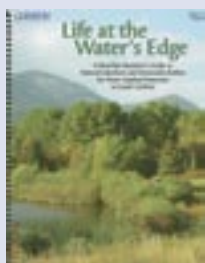
For more information: Dept. of Pesticide Regulation, 864-646-2150 or <http://dpr.clemson.edu>.



Guidebook helps protect state's lakes and streams

By Debbie Dalhouse

As the population of South Carolina grows, landscaping practices can either help or hurt the quality of the state's lakes and streams. Now homeowners have a guidebook for landscaping practices that will protect the lakes and streams they love.



Life at the Water's Edge is a 150-page manual filled with photographs, illustrations and practical solutions to shoreline landscaping problems. It explores shoreline natural history, describes the importance of watersheds in protecting water quality, compares the ecology of healthy water bodies with polluted ones and explains the advantages of natural buffer vegetation.

It was written and edited by Lin Roth, an environmental scientist at Clemson's Baruch Institute of Coastal Ecology and Forest Science in Georgetown. Co-authors include water quality specialist Barbara Speziale, horticulturist Bob Polomski and watershed management specialist Bruce Pinkerton.

The book received a national award from the Renewable Natural Resources Foundation and has been cited by the North American Lakes Management Society. Funding was provided by the S.C. Department of Health and Environmental Control.

To order, go to www.clemson.edu/psapublishing/. Enter "WQL 24" in the search box and select "Pub Code" from the drop-down menu. Cost is \$20.

Group declares war on kudzu

By Diane Palmer

Kudzu is still doing what it does best: take root, spread and smother all that it covers. But now Master Gardeners in Spartanburg are fighting back. Newt Hardie and Henry Pittman, with the support from the mayor and the Men's Garden Club, formed the Coalition to Control Kudzu without Herbicides.

The group now has more than 25 demonstration sites in and near the city showing ways to kill the obnoxious vine without using chemicals. These and 15 test plots at the Spartanburg YMCA are tended by local Master Gardeners, Clemson Extension Service and other volunteers.

Their methods include manual removal of the plant's root crowns and the use of heavy plastic sheeting to kill the weed with heat. Another approach uses a patented kudzu guard that prevents the vine from climbing guy wires and utility poles.

"The demonstration sites show proof that kudzu can be controlled in urban areas," said Hardie. The methods can be applied to almost any small urban area, including neighborhood corners, sidewalks, fences, creeks and more.

For more information: David Parker, Spartanburg County Extension, 864- 596-2993 or dprkr@clemson.edu.



Dr. Lou Adams, a member of the Coalition to Control Kudzu, works in one of the demonstration sites.



Clemson President Jim Barker and Greenwood Genetic Center Director Roger Stevenson sign a landmark agreement.

Research focuses on genetics and food

By Peter Kent

Clemson University and Greenwood Genetic Center have joined forces to find causes and cures for birth disorders and susceptibility to premature birth, hypertension, obesity and diabetes. The partnership, called the Genetics Collaborative, seeks to increase research in genetics and nutrition-related diseases.

Greenwood scientists will provide the expertise in human genetics, while Clemson scientists will focus on the genetics of nutrition and how specific food micronutrients influence human health. This ground-breaking research will be affiliated with the Genomics Institute, the Institute for Nutraceutical Research and the Biosystems Research Complex at Clemson University.

In addition, the partners hope to expand the graduate education program in human genetics, including the addition of a distance education center on the Greenwood campus. This initiative will strengthen the appeal of Upstate South Carolina for genetics-related companies. SC Bio, the state's biotechnology incubator located at the Greenwood Genetic Center, will support commercialization of new technologies that result from the collaborative research.

For more information: www.clemson.edu/bio/.



Scientist improves milk fat content

By Peter Kent

Clemson researchers are lowering the saturated fat content in milk – while it's still in the cow – by adding fatty acid to the cow's diet. Animal scientist Tom Jenkins has developed a patented feed formula that combines fatty acid and ammonia. The combination uses the natural chemicals and processes of the cow's digestive system to lower the overall fat content in milk and to change the remaining fat to a more healthful monounsaturated form.

Jenkins' work was honored with the University's prestigious 2005 Godley-Snell Award for Excellence in Agricultural Research. He holds two patents and has authored or co-authored more than 65 refereed publications in scientific journals. He also has received the American Feed Industry Award from the American Dairy Science Association for his research.

For more information: Tom Jenkins, 864-656-2707 or tjnks@clemson.edu.

Plant-A-Row for the hungry

By Diane Palmer

One in ten U.S. households experiences hunger or the risk of hunger, according to the U.S. Department of Agriculture. Master Gardeners across South Carolina are addressing this issue through a project called Plant a Row for the Hungry. The effort supplies year-round fresh produce that is donated to local food banks and soup kitchens.



In Greenville County, the Project Host Soup Kitchen Garden supplies produce for 250 people a day. Established in 1999, it was one of the first in the nation to be located at a soup kitchen. A similar project in Charleston County distributes about 70,000 pounds of produce a year in the Berkeley, Charleston and Dorchester area.

The Spartanburg County project donated 32,715 pounds of fruits and vegetables to local shelters last year. The two-acre garden in Boiling Springs supplies food for the Second Presbyterian Soup Kitchen, Mobile Meals, Children's Shelter, Seniors of Spartanburg, Safe Homes and Rape Crisis Center. There are many other such projects in the state, including the York County garden that distributed 1,435 pounds of produce this year through the Unity Presbyterian Church in Fort Mill.

For more information: www.clemson.edu/hort/scmg/.



Technology takes bullying into cyberspace

By Kerry Coffey

Traditional school bullying has always been a concern. Now, technology has created “cyber bullying” through email, instant messaging, chat rooms, websites and text messaging. Clemson researchers have conducted the first national study to examine the effects of cyber bullying on middle school students. The study by Susan Limber, associate director of the Institute on Family and Neighborhood Life, and Robin Kowalski, a Clemson psychology professor, was featured in the August 1, 2005 issue of TIME magazine.

They found that cyber bullying has become a widespread phenomenon. Of 3,700 middle school students surveyed, 18% had experienced cyber bullying in the previous two months; the rate was 21% among eighth-graders. Girls were more likely than boys to be both instigators and victims of cyber bullying. This form may be more harmful than traditional bullying. It can be more frightening for the victim when they don’t know who their bully is and the bully never sees the reaction of the victim.

“Victims should not respond to the message of cyber bullies,” Limber advised. “They should print and save the messages, show an adult and block incoming messages from the bullies. Parents should take an active role in their child’s online time and know how their child is using the Internet.”

For more information: Clemson Institute on Family and Neighborhood Life, 864-656-6271 www.clemson.edu/ifnl/ or U.S. Department of Health and Human Services www.stopbullyingnow.hrsa.gov/.

ThinkShops improve school performance

By Pam Bryant

Enhance performance and reduce stress. Understand your personality type and learning style. Improve communication skills and resolve conflict. These are just some of the objectives of a professional development series called *ThinkShops*™ recently launched by Clemson’s Youth Learning Institute (YLI).

ThinkShops helps educators and youth development professionals, offering tools and techniques that maximize effectiveness and performance in, and outside, the classroom. The series includes several nationally-recognized workshops based on scientifically-validated research.

“The purpose of *ThinkShops* is not to tell educators or other youth workers how to do their jobs,” said Stephen Lance, certified trainer for *ThinkShops*. “Through our partnerships, we have assembled a series of innovative best-practices that are proven to enhance performance. This has a direct impact on the lives of young people.” One YLI partner is the Institute of HeartMath (IHM), based in Boulder Creek, California. Through this partnership, YLI offers *The Resilient Educator*® training that teaches strategies to stop the negative impacts of stress – mentally, emotionally and physically.

“In my 22 years of teaching, these were the most beneficial workshops I ever attended,” wrote a high school educator. The workshops are also offered to S.C. Department of Juvenile Justice teachers, juvenile correction officers and staff.

For more information: Pam Bryant, 803-553-7705 or pbryant@clemson.edu.



Community scholars apply lessons in service

By Kerry Coffey

A new initiative is bringing academically talented, socially conscious and civically engaged students to Clemson to integrate public service with their undergraduate experience. The Community Scholars program offers four-year scholarships for students to conduct service projects in communities across the state. It also includes a stipend for service abroad in the junior year and a community research project in the senior year.

For the first two years, Community Scholars live together with like-minded students on a designated floor of the Clemson House that has been named the Civics and Service House. In the Clemson community, they are organizing a haunted house for Clemson Elementary School children and are partnering with Ancheaux's restaurant to raise money for the American Red Cross.

Other projects will be developed across the state after regular classes end in May. Students in these programs have many opportunities to serve their community while they learn about leadership and civic engagement. Susan Limber of the Institute on Family and Neighborhood Life is faculty director and Jennifer Shurley is community service coordinator.

"This is a unique model with both local and international projects, as well as a research component," said John Kelly, vice president for Public Service and Agriculture. "These young people are setting the standard for community and civic engagement."

For more information: Kathy Woodard, 864-656-0205 ckathy@clemson.edu.



4-H gives kids hands-on environment education

By Jason Caudill

Fourth and fifth graders in Oconee County are learning about their environment through hands-on lessons taught by 4-H leader Jason Caudill. He worked with school district administrators and teachers to develop the Oconee Kids Environmental Education (OKEE) program.

The one-day field trips to the Piedmont Forestry Center near Salem meet the S.C. Curriculum Standards and engage students in hands-on learning activities. Fourth graders conduct a stream assessment to measure water quality, learn about forestry, play a game that teaches about predator-prey relationships, measure the weather, and learn about Native American culture during a pow-wow. Fifth graders conduct lessons on soils and wildlife.

"It embodies the 4-H principle of learning by doing," Caudill said. The program serves students in eight elementary and middle schools in the county. Major funding is provided by Oconee County Council. Other partners include the S.C. Department of Natural Resources, the Natural Resource Conservation Service and the Blue Ridge Electric Cooperative.

For more information: Jason Caudill, 864-638-5889 ext. 116 or caudill@clemson.edu.



Veterinarian named director of animal health programs

By Peter Kent

Boyd H. Parr, DVM, has been selected as the new director of animal health regulatory programs for Clemson's Livestock-Poultry Health Programs, based in Columbia.



"Dr. Parr joined the division in 2004 and has done an outstanding job as our field vet working with cattle and dairy herds," said Tony Caver, state veterinarian. "His membership in national bovine and dairy associations gives Clemson University veterinary programs professional credibility at the state and national level."

Parr brings to the position experience in enforcing state and federal animal health laws and regulations designed to protect animal health. The programs regulate testing and movement of livestock and poultry, auction markets, sales and all animal disease control programs in South Carolina.

Under Parr's direction, the division successfully obtained a competitive USDA grant of nearly \$200,000 to implement the National Animal Identification System. Because of his efforts, South Carolina became one of the first states in the nation to begin to register livestock premises, a vital step toward preventing diseased animals from entering the food system.

Prior to joining Clemson, Parr was in private practice for 26 years. A Newberry native, he earned a B.S. in pre-professional studies in animal and veterinary sciences from Clemson and a doctorate in veterinary medicine from the University of Georgia in 1978.

For more information: Boyd Parr, 803-788-2260, ext. 231 or bparr@clemson.edu.



Interest grows in Carolina Gold rice

By Tom Lollis

The rice that made Charleston the richest city in the British colonies is getting renewed attention because of the dedication of a Clemson scientist. Carolina Gold rice was once grown on more than 75,000 acres in the Lowcountry; but the freeing of slaves ended large-scale rice production in South Carolina.

To preserve the heirloom crop, Clemson scientist Merle Shepard organized the Carolina Gold Rice Foundation. In August, the foundation held a national symposium that drew 135 rice planters, agriculturalists, cultural historians, chefs and scholars to Charleston for a taste of history and cuisine.

"We wanted to ensure that Carolina Gold would be around for years to come and that the public would be aware of its importance," said Shepard, foundation board chairman. He is growing Carolina Gold and testing new varieties at Clemson's Coastal Research and Education Center in Charleston.

Glenn Roberts, president of the rice foundation said, "Last year only 10 acres of Carolina Gold were grown in South Carolina. This year we'll have 60 acres and next year we hope to have 200."

For more information: Merle Shepard, 843-402-5393, mshprd@clemson.edu or www.carolinagoldricefoundation.org/.



Fall plant sale in Botanical Garden

Hundreds of unusual landscape plants, including perennials, trees, shrubs, ornamental grasses, native plants and shade plants, were sold at the South Carolina Botanical Garden's fall plant sale September 30-October 1.

Garden staff and Master Gardener volunteers are available to help with plant selection and garden design ideas. Mark your calendar now to attend the spring sale April 21-22.

For more information, including a list of plants that are offered in the sales: www.clemson.edu/scbg/plant_sale.htm

Adding wildlife habitat may help landowners

By Debbie Dalhouse

Clemson scientists are studying ways to stabilize farm income by including wildlife habitats in land management practices. They are evaluating a series of conservation practices on 2,300 acres at the Pee Dee Research and Education Center in Florence. The study is developing habitats for wildlife, fish, waterfowl and songbirds on the center's lake, wetlands, upland fields and forests.

This research will provide science-based information for landowners to compare return-on-investment for practices recommended by the USDA Natural Resource Conservation Service. Farmers who implement these practices can recover up to 75% of their cost through the federal Wildlife Habitat Incentive Program. In addition, they can earn additional income by leasing rights for hunting, fishing and wildlife observation.

Clemson wildlife biologist Greg Yarrow is leading the research effort. He is joined by Clemson wildlife biologists T.J. Savereno and Bill Bowerman, agronomists Jim Frederick and Ed Murdock, and graduate student Laura Knipp. Research partners include Francis Marion University, the S.C. Department of Natural Resources, Ducks Unlimited, the Natural Resources Conservation Service and the USDA Wildlife Habitat Management Institute.

For more information: Greg Yarrow,
864-656-7370 gyarrow@clemson.edu.



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